SYMONS'S
MONTHLY
METEOROLOGICAL MAGAZINE.

CCCCIX.] FEBRUARY, 1900. [PRICE FOURPENCE, or 5s. per ann. post free.

Henry A. Hazen.

SIRUR, INDIA, 1850—WASHINGTON, U.S.A., 1900.

WE regret having to record the premature death of our frequent correspondent, Prof. Hazen, who was knocked down by a bicycle on January 22nd. He was the son of a missionary in India, was educated in the United States, became a Professor in connection with Yale College in 1872, and resigned that appointment on obtaining one in the U.S. Weather Bureau. His overflowing energy is attested by the fact that in the ten years during which he was in the Weather Bureau service, we have the titles of more than 60 memoirs and papers from his pen—irrespective of short notes such as he has sent to the *Met. Mag.* He devoted much attention to thermometer exposure, but his most important publication was his useful *Handbook of Meteorological Tables.*

OUR CLIMATOLOGICAL RECORDS FOR THE BRITISH EMPIRE FOR 1898.

WE have to preface the above title with the word "Our," because the title without it, did not indicate with sufficient clearness that the remarks were based solely on the results of the 19 typical stations from which we publish summaries monthly. We shall perhaps make the point clear, if we mention one of the criticisms. In our Summary for 1897 we quoted, "Highest temperature in shade 110°·8 at Adelaide." This was strictly true as regarded the records published by us, because India is represented only by Bombay and Calcutta, at which the max. were respectively 93°·7 and 104°·6. But a correspondent pointed out that, far from 110°·8 being the highest temperature in the shade in the British Empire in 1897, that distinction probably belonged to Jacobabad with 123°·5 on June 12th. This is quite true, but it is impossible for us, or indeed for all the official meteorologists in the Empire, to give the absolute extremes, for if the temperature rose to 123°·5 at Jacobabad, who can prove that it did not rise to 124° in some valley in the neighbourhood, where no thermometer was ever taken?

We do not attempt impossibilities. Years ago we selected the principal cities of some of our colonies as fairly typical of the climates of those colonies; the Directors of the observatories, without a single exception, promised to help us, and have loyally done so for a quarter of a century. It is perhaps not for us to assess the value of the long series of synchronous tables thus compiled and published, but it is on these tables, and on these alone, that our annual summaries have been based.

The feature that has impressed itself most strongly on our mind in preparing the Climatological Table for 1898 is its remarkable similarity to that for 1897, for if we look down the summary of extremes we find only three changes—viz., the dampest station, the least rainfall, and the greatest amount of cloud. As the dampest stations Ceylon and Trinidad appear in place of Esquimalt, the relative humidity not being given in the recent returns for the latter station. Malta in 1898 had a rainfall nearly ten inches above the average of 15 years, nearly double that of 1897, and, we believe, the greatest on record, therefore it gives place to one of the Australian stations—Melbourne. London appears (not for the first time) as the most cloudy station.

The other extremes in the summary seem to be normal, both as regards the stations at which they occur, and the values recorded. We believe that we are correct in saying that not one of them is unprecedented, unless it be the rainfall of 15·61 in. at Melbourne, which is the least for 25 years, and less than half that of 1887.

Summary.

Highest temp. in shade ...	113°·3 at Adelaide, on Jan. 11th.
Lowest „ „ ...	—34°·6 at Winnipeg, on Dec. 31st.
Greatest range in year.....	126°·1 at Winnipeg.
Least „ „	19°·8 at Grenada.
Greatest mean daily range	22°·7 at Winnipeg.
Least „ „ „	9°·6 at Grenada.
Highest mean temp.....	81°·6 at Colombo, Ceylon.
Lowest „ „	35°·2 at Winnipeg.
Driest station	Adelaide, mean humidity 59.
Dampest „	Colombo, Ceylon, and Trinidad ... } mean humidity 80
Highest temp. in sun	173°·7 at Adelaide.
Lowest temp. on grass* ...	—17°·5 at Toronto.
Greatest rainfall	103·11 in. at Colombo, Ceylon.
Least „	15·61 in. at Melbourne.
Most cloudy station	London, average amount 6·4.
Least „ „	Grenada, average amount 2·6.

* The min. on grass is not recorded at the other Canadian stations.

CLIMATOLOGICAL TABLE FOR THE BRITISH EMPIRE FOR 1898.

Stations. *Those in Italics are South of the Equator.*	Absolute. Maximum. Temp.	Absolute. Maximum. Date.	Absolute. Minimum. Temp.	Absolute. Minimum. Date.	Average. Max.	Average. Min.	Average. Mean.	Average. Dew Point.	Average. Humidity.	Absolute. Max. in Sun.	Absolute. Min. on Grass.	Total Rain. Depth.	Total Rain. Days.	Average. Cloud.
	°		°		°	°	°	°		°	°	in.		0—10
England, London	91·2	September 8	24·3	February 21	59·6	44·7	52·2	44·5	78	127·7	21·9	17·69	140	6·4
Malta	96·3	June 28	41·4	December 23	72·6	59·9	66·3	56·8	77	153·6	32·7	29·17	80	3·5
Cape Town	95·7	February 22	34·1	June 18	69·8	53·4	61·6	51·8	77	...	...	28·80	94	3·6
Mauritius	86·8	February 9	56·7	July 2	79·6	68·8	74·2	65·2	76	142·1	47·9	47·76	187	5·8
Calcutta	103·4	April 8	48·4	January 8 & 9	86·5	69·9	78·2	67·2	72	160·8	39·0	59·52	87	4·5
Bombay	94·9	May 28	62·3	March 3	86·7	75·7	81·2	72·2	75	145·5	52·5	74·09	110	3·6
Ceylon, Colombo	94·5	March 30	66·8	January 28	87·9	75·4	81·6	72·9	80	162·0	58·0	103·11	196	5·4
Melbourne	109·4	December 5	32·3	June 21	69·0	50·5	59·7	46·7	65	158·5	25·5	15·61	102	5·4
Adelaide	113·3	January 11	36·1	June 21	73·9	53·6	63·8	47·4	59	173·7	29·2	20·77	116	4·2
Wellington	77·3	December 11	31·9	August 1	61·7	48·8	55·2	46·2	72	138·0	19·0	41·96	154	4·4
Auckland	90·0	January 4	40·0	May 31	65·1	52·7	58·9	49·7	72	146·0	36·0	40·76	174	5·2
Jamaica, Kingston	93·5	January 13	62·6	November 12	86·9	70·7	78·8	68·4	74	...	...	34·60	84	5·0
Trinidad	95·0	May 11	60·0	December 4	87·6	69·2	78·4	70·9	80	171·0	60·0	58·85	185	...
Grenada	88·2	Mar. 14, 28 / Sept. 27	68·4	August 17	83·2	73·6	78·4	69·8	73	155·2	..	81·77	225	2·6
Toronto	97·1	September 2	—15·0	January 30	55·8	39·0	47·4	40·7	76	123·5	—17·5	30·97	138	5·9
New Brunswick, Fredericton	93·9	July 3	—31·5	January 31	52·0	31·7	41·9	32·3	67	...	...	46·00	145	5·8
Manitoba, Winnipeg	91·5	July 13	—34·6	December 31	46·5	23·8	35·2	...	...	...	...	27·19	114	5·5
British Columbia, Esquimalt	88·0	August 10	26·0	December 30	56·7	42·3	49·5	...	...	...	...	26·58	151	6·1

LOW BAROMETRIC PRESSURE ON DECEMBER 29TH, 1899.

To the Editor of the Meteorological Magazine.

SIR,—Referring to the reports which appear in the January number of the *Met. Mag.*, you may be interested in learning that the reading of the barogram of the Falmouth Observatory was (after all corrections had been applied and the original observations reduced to 32° at sea level) 28·254 in. This being from a self-recording instrument, the time of the minimum here can be definitely fixed, viz., 0.30 p.m. I may mention that on only one occasion since 1871, when the barograph was fixed, has this very low reading been exceeded, and that was on the 4th of December, 1876, when it was 28·201 in.

The average velocity of the wind between 1 a.m. and midnight of the 29th December last was 35·5 miles per hour. The maximum occurred at 2 p.m. and was 45 miles. On the 4th of December, 1876, the average velocity for the 24 hours was 29 miles.

I take this opportunity of calling attention to the very mild nature of the climate of the South-West of England when compared with other parts and with the very low temperatures you publish for December, 1899. Such a marked contrast cannot fail to show the desirableness of the Cornish peninsula as a winter resort for invalids. During this winter the temperature in the thermograph screen at the Observatory, which is 167 feet above sea level, has only once been below freezing point, viz., on the 15th of December, when it was 31°·9. The minimum in the Stevenson screen close by was 30°·1, and at St. Cuthbert's, which is three-quarters of a mile nearer to the sea, and at a height of 50 feet, where the thermometer is also in a Stevenson screen and 4 feet over grass, it was 31°·2.

During January instant the lowest temperature recorded by the thermograph at the Observatory has been 34° on the 4th and 5th. The highest minimum was 47°·8 on the 12th.

On the 14th instant I counted 61 plants and shrubs in flower in my garden of 1½ acres. The number would doubtless be more than doubled if the other gardens in this neighbourhood were included.

Yours faithfully,

Falmouth, January 22nd, 1900. WILSON LLOYD FOX.

Mr. J. W. Deane calls our attention to the fact that the statement, attributed to him on p. 178 is altogether incorrect. He says that the min. really occurred at noon—but as he does not state whether his readings are from a standard, whether they are corrected to 32° or reduced to sea level, we cannot usefully quote any other details. He also says that the statement attributed to Col. Magrath is incorrect, but he does not explain in what way.

The following may be regarded as a continuation of the notes on page 178, but of course they should have been in their proper places had they arrived before that page was printed.

Royal Inst., Truro.—Min. 28·31 in., lowest for 50 years. R.A.GREGG.

Cheltenham.—Lowest S.L. pressure at 6 p.m., 28·291 in. R. TYRER.

ROYAL METEOROLOGICAL SOCIETY.

AT the ordinary meeting of this Society, held on Wednesday evening, January 17th, at the Institution of Civil Engineers, Great George Street, Westminster, Mr. F. C. Bayard, LL.M., President, in the chair, the following were elected Fellows :—

C. E. CARR.
A. E. CHEETHAM.
ADOLPHUS COLLENETTE.
F. N. DENISON.
G. S. EUNSON.
DANIEL HALL.
CHARLES HAWKSLEY, C.E.
A. B. JONES, M.B., M.R.C.S.
Prof. G. W. KÜCHLER, M.A.
W. H. LEETE, Assoc.M.Inst.C.E.
F. G. LINNELL.
EUSTACE H. LIPSCOMBE, M.B., B.C.
L. S. M. MARSH.
A. MARSTON.
W. E. MILNER.
A. L. ORMEROD, M.B., M.R.C.P.
E. J. POYSER, F.Z.S.
C. N. TWEEN, Assoc.M.Inst.C.E.
M. W. ZAMBRA.

At the subsequent Annual Meeting the Secretary read the Report of the Council, which showed that the most exceptional event in connection with the Society had been the removal of the offices and library from 22, Great George Street to new rooms at 70, Victoria Street, because of the acquisition of the former premises by the Commissioners of Her Majesty's Works and Public Buildings.

Mr. F. Campbell Bayard in his presidential address discussed the meteorological observations made at the Royal Observatory, Greenwich, during the 51 years 1848–1898, and brought out in a novel way many interesting features in the variability of the readings of the barometer, maximum and minimum temperatures, relative humidity, direction of the wind, and rainfall. These were shown in diagrammatic form on the screen by means of lantern slides. The address was also illustrated by views of the Royal Observatory and of the instruments employed.

The following gentlemen were elected Officers and Council for the ensuing year :—

President.
GEORGE JAMES SYMONS, F.R.S.

Vice-Presidents.
RICHARD BENTLEY, F.L.S., F.R.G.S.
CAPT. ALFRED CARPENTER, R.N., D.S.O., F.Z.S.
HENRY NEWTON DICKSON, B.Sc., F.R.S.E., F.R.G.S.
SIR CUTHBERT EDGAR PEEK, Bt., M.A., F.R.G.S., F.R.A.S.

Treasurer.
CHARLES THEODORE WILLIAMS, M.A., M.D., F.R.C.P.

Secretaries.
FRANCIS CAMPBELL BAYARD, LL.M. | EDWARD MAWLEY, F.R.H.S.

Foreign Secretary.
ROBERT HENRY SCOTT, M.A., D.Sc., F.R.S.

Council.
FREDERICK JOHN BRODIE.
RICHARD HENRY CURTIS.
WILLIAM HENRY DINES, B.A.
WILLIAM ELLIS, F.R.S., F.R.A.S.
MAJOR LAMOROCK FLOWER.
CAPT. M. W. C. HEPWORTH, F.R.A.S.
JOHN HOPKINSON, F.L.S., F.G.S.
RICHARD INWARDS, F.R.A.S.
BALDWIN LATHAM, M.Inst.C.E., F.G.S.
H. R. MILL, D.Sc., F.R.S.E., F.R.G.S.
R. COCKBURN MOSSMAN, F.R.S.E.
CAPT. D. WILSON-BARKER, F.R.S.E.

THE METEOR OF JANUARY 9TH, 1900.

To the Editor of the Meteorological Magazine.

SIR,—Although the occurrence of daylight meteors is not so rare as some of my correspondents suppose,* yet some of the features of this meteor suggested to me that it was worth while to collect all available information about it. In response to a letter which I addressed to the *Times*, I have received a number of communications from different quarters, and have attempted to harmonize them.

In the result I have come to the conclusion that the meteor first assumed luminosity about 30 miles nearly S. of Dungeness; that it crossed the coast line nearly horizontally, at an elevation of about 13 miles, between Hythe and Folkestone, and about that time began to break up; it split up a little to the east of Canterbury, and then, rapidly falling, disappeared at a point near the Reculvers.

It may be useful to give a short *resumé* of the details which I received. To do more would occupy too much space.

All observers agree that the time was between 2.55 and 3 p.m. It is almost certain that it was 2.59. The sun was shining brightly in a cloudless sky, and the moon was also bright, about 20° above the horizon, and its direction was E. by S.

The Rev. H. A. Day, at Dymchurch, "was conscious of a bright light in the sky, but saw nothing distinctly. This was followed by a sound resembling peals of thunder or reports of distant cannon." His father (Mr. Albert Day, J.P.), at the same time at Hythe, "saw the meteor coming towards him over the sea from the south like a great rocket," and it passed on the Folkestone side of Hythe towards the hills in a north-easterly direction. It was visible for about half-a-minute; left a long trail of smoke which remained for another half-minute, and there was a rumbling noise in the air.

Enquiries at Ramsgate having produced no information, I infer that the meteor passed to the westward of that town, and so, being in the same direction as the sun, escaped observation.

Mr. Edwin Abbott saw it cross the line of the Edgware Road when walking in it towards London. As this line produced cuts the coast at St. Leonards, it follows that he saw it when well over the Channel.

My daughter saw it from Warwick Road, Maida Vale, traversing an angle which would include the coast from Dungeness to Hythe. To her it disappeared as it passed beneath the moon.

The last two observers agree as to its having an elliptical head with long tail, the colour silvery white, and no sparks or explosion.

Miss Holford, walking due east in St. John's Road, Eastbourne, saw it pass from the sea on her right, and lost sight of it when nearly N.E. of that place.

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* For other instances see *Met. Mag.*, XI., 10; XIII., 48, 64; XXIX., 20; XXXI., 11, 25.

At Brighton, the Rev. R. Hudson saw it first in the S.E. "It fell suddenly vertically just previous to disappearance, with a dipping motion like a bird, over some houses on a hill to the north-east." Here it appeared with a double tail; the lower member silvery white, the upper faint.

Miss Beeching, at Tonbridge, saw it burst when near the moon into four or five golden balls.

From Shooter's Hill Road, Blackheath, Miss Foster saw it N.E.; white, with a bright tail, and one reddish spark behind it.

From West Norwood, Miss Moon saw it leave a long tail of yellow sparks in the S.E. Similar reports from Reigate (two), Weybridge and Dulwich describe it as being seen first to the south, or right, of the moon and disappearing to the north, or left, of the moon.

Mr. Pleydell Bouverie, at Glynde Place, saw it passing away from the moon towards the N.E. and dropping at a steep angle.

Mr. Hussey, of Debden Hall, Saffron Walden, seems to have seen the last of it. To him it appeared as nearly in the S., "its course vertically downwards."

Several correspondents say that the apparent course was from west to east. I think the variance between that and what I have laid down as the true line is due to perspective and to the varying angle of its flight. Mr. Day thought it approached him "with an upward slanting direction." This again would be due to perspective.

A Beckenham correspondent of the *Daily Graphic* describes a meteor at the same time, which must have been a different one, or else there is some confusion in his account. He says "it passed across the sky at about 60° above the horizon in a general direction from a little to the N. of W. to the S. of E. It threw off flakes of flame, leaving a trail of bright light, and vanished low down near the horizon." I think many persons do not appreciate the difficulty of observing anything 60° above the horizon. No one else gave any such elevation, and the direction is plainly inconsistent with all other reports. But it may have been a different meteor altogether. There certainly was another at 6 p.m. on the same day seen from Southbourne (Sussex), passing from S. to N.

JAMES G. WOOD, F.R.Met.Soc.

115, Sutherland Avenue, W., Jan. 29th, 1900.

P.S.—Since writing the above I have seen a paper on the meteor in *Nature*, January 25th. The course there suggested, namely from Cherbourg to Calais, is absolutely inconsistent with the above observations at Hythe, Eastbourne, Brighton and Blackheath. A meteor crossing, and passing to the north of the parallels of those places could not possibly be travelling along the line of the French coast. On the other hand, some of the notes in *Nature* do not agree with mine, either as to direction or time. On the whole, I much incline to the view that there were two meteors.

J. G. W.

REVIEWS.

Practical Exercises in Elementary Meteorology, by ROBERT DE COURCY WARD, Instructor in Climatology in Harvard University. Ginn & Co., Boston, U.S.A. 1899. Royal 8vo, xiii.–200 pages, 53 engravings.

AT present we are not aware of any classes for teaching meteorology or climatology in this country; perhaps such an innovation may spread to England, but as yet we must go to the United States or to the Continent to find either teachers or taught.

Among the former, Mr. R. De C. Ward has long held a prominent place, as several of our previous volumes show. Now, after many years' experience, he has prepared the above-mentioned work, *not* as a text book, but as a truly elementary manual. He starts his readers (pupils) without any instruments, and then gradually carries them on until they leave the book (class) with a very sound and thorough comprehension of the leading principles of meteorology, competent to keep an excellent record, to understand weather maps, cyclones and anticyclones, isobars, gradients, the principles of weather forecasting, the calculation of altitudes, and many other of the simpler problems of meteorology.

Taken as a whole, we think that the book is excellent, well written and well printed. There are a few points which the author will probably alter in the next edition, *e.g.*, on p. 20, "Mercury is the liquid universally employed in barometers." "Universally" is rather severe upon the open-scale glycerine ones. On page 23, writing about aneroid barometers, he says :—"The outer margin of the face, underneath the glass, is graduated into inches and hundredths, and the pressure may thus be read at once." We do not remember seeing an aneroid graduated to hundredths, and the engraving to which the above remarks apply shows the ordinary divisions of tenths and half-tenths, *i.e.*, twentieths. A few additional words in the latter half of the following paragraph would probably be welcomed by a beginner who found himself with (say) S. 6, S.W. 6, W. 6 :—

"*Wind.*—Determine the frequency of the different wind directions by counting the total number of times the wind has blown from N., N.E., E., &c., during the month. The wind which you have observed the greatest number of times is the *prevailing* wind. It may, of course, happen that two or three directions have been observed an equal number of times. The number of calms also should be recorded."

Moreover, we are not sure that the instruction is correct. Carry on the illustration which we gave above, S. 6, S.W. 6, W. 6, N.W. 4, N. 1, N.E. 7, E. 1, S.E. 0. According to the author's rule, N.E. would be entered as the prevailing wind, although the winds with a westerly component are 16, and those with easterly only 8. Could N.E. be called the prevailing wind of such a month?

We do not like, or perhaps do not understand, Fig. 7. If the thermometers are "mounted together on a board," we do not see how the very different amount of shaking required by the max. and by the min. is to be given. Probably they are detachable, but they are inclined much more than is usual in this country, and, unless special precautions are taken to ensure absolute rigidity both of the screen and of the thermometers, we fear that the records would be too low whenever there was a gale.

On page 28, Messrs. Green, of New York, have supplied a block, which shows that they are not *au fait* at providing the muslin and wick for a wet bulb. The wick is pinched too tightly at the bottom of the bulb; it is too thick, and hanging as represented it would soon empty the reservoir.

On p. 103 we should insert the word which we have placed in square brackets. "Such a figure is known as a [thermic] *wind rose.*"

These, however, are all very small matters, and easily put right. Although specially adapted for school use in the United States, the book would be useful in this country for all who desire to establish a firm basis of knowledge as a preliminary to theoretical investigations.

Osservatorio centrale del real Collegio Carlo Alberti in Moncalieri. Annuario Storico Meteorologico Italiano per l'anno 1900. Vol. II., 1899. Ed. by G. BOFFITO and P. MAFFI, Torino, 1900. Post 8vo, 398 pages, and 4 plates (portraits).

WE spoke highly of the first volume of this serial; we are very glad to be able to speak even more favourably of the present. Of course it has, so to speak, an Italian atmosphere around it, and the editors see things from Italy; but we do not know any publication which gives anything like so good a chronicle of astronomical, meteorological and seismic phenomena all the world over as that on pp. 327–353 under the title "Cronaca astro-meteorologica dell' anno 1898–99," and in the "Notizie varie" from p. 355 to 379.

The whole book is charming, and it is not easy to give in a few lines an idea of the variety and interest of its contents. It is divided into parts.

Part I. contains articles and memoirs—twelve, of which we may mention a few: Sunshine in Rome, Attempts to drive away Hail, How to observe Meteoric Dust, The Meteorology of Lucretius and of Epicurus, Mistpoeffers, and it concludes with Our meteorologists—biography, bibliography, and excellent portraits of G. V. Schiaparelli, M. Del Gaizo, G. Lais and T. Bertelli.

Part II. A.—Bibliographical notices, Italian. Astronomy, Terrestrial Physics, Meteorology, Observatories, History of Science, Obituary notices. Part II. B.—Bibliographical notices from all other parts of the world.

After all this, comes the excellent Chronicle which we have already mentioned.

And on the back of the book we read L. 3—three lire, say, half-a-crown for 400 pages, beautifully printed. How is it done?

By the bye, we noticed one—and only one!—error, but it is rather funny. Sig. Boffito has copied a paragraph, from *Il Progresso*, as to the **Termometro gigante** of Col. Knight; the paragraph begins by describing our countryman as "uno scienziato americano," and then keeps up the idea by stating that it is being used "near Winchester in Massachusetts," whereas the 70 ft. thermometer is really near Winchester, Hampshire, England.

Waterspouts on the Coast of New South Wales, by H. C. RUSSELL, C.M.G., F.R.S. [Ex. Jour. R. Soc. of New South Wales.] 8vo, 18 pp., 8 plates. [Sydney, 1898.]

WE have an old engraving which represents about 13 waterspouts as being visible at one moment. With the usual reluctance to believe what we have not personally seen, we have always regarded it as absurdly excessive, thinking that 3 or 4 would be an ample number; yet here is Mr. Russell bringing up an engineer with his theodolite to prove the existence of 20 in the one morning of May 16th, 1898. Apparently they were not all visible at once, so we still have to wait for the evidence of 13 *at once*. The tallest was 5014 ft. high (nearly a mile), whereas another in Congee Bay was only 100 ft. high.

It is an interesting paper and well illustrated, but we are still without a photo *from nature*—these seem to be all photos from sketches or drawings.

THE SNOW OF FEBRUARY 2ND.

HEAVY, or very heavy, snow fell over the South of England. The following data will illustrate its distribution:—

County.	Station.	Observer.	Depth of Snow. in.	Yield as Rain. in.
Middlesex ...	Camden Square	G. J. Symons	5½	·87
,, ...	Bycullah Park, Enfield...	J. McEwan	7	·87
Surrey	Beaconscroft, Chiddingfold	Admiral Maclear.....	7	·50
,, ...	Field Place, Weybridge..	G. A. Yool	7	1·17
Sussex	Burgess Hill	F. H. Phillips	3	·16
Hants	Fowley, Liphook	E. A. Lee.....	8	1·12
,, ...	Farnborough School	Rev. G. C. Carter ...	[7½]	·93
,, ...	Hartley Wintney	G. Machin	12½	1·67
,, ...	Belswood, Winchfield ...	F. Walkinshaw	9	1·15
Herts	The Grange, St. Albans..	J. Hopkinson	9	·75
Bucks	Upton, Slough	R. Bentley	6½	·65
Norfolk	Brundall, Norwich.....	A. W. Preston.....	0	·00

METEOROLOGICAL SOCIETY OF THE MAURITIUS.

WE are glad to say that, thanks to Mr. Claxton, we have received for gratuitous distribution the surplus copies of the following publications. There are very few of some of them, but we shall do our best to distribute them where they will be most generally useful, especially where they will tend to complete existing sets. We are not aware that a *perfect* set exists anywhere—even in Mauritius.

All applications must be addressed to the undersigned, and it is to be understood that no correspondence on the subject can be undertaken. The applications will all be filed, but the only reply will be the sending, post free, of such of the pamphlets (if any) as may be available.

G. J. SYMONS.

62, Camden Square, N. W.

Publications of the Meteorological Society of the Mauritius.

Notice of Meeting, May 12th, 1853.	...	...	...	...	4to.
Proceedings of the Second Annual Meeting, October 20th, 1853.					8vo.
Transactions, published in 1853, 1859	...	...	...	...	,,
Proc. and Trans. ,, ,, 1861, 1864	...	...	...	...	,,
Proceedings, 1861, 1862, 1863, 1866	...	...	...	...	,,
Notices of Meetings, 1882 to 1885 ...	...	...	...	...	fol.

WEATHER FORECASTS BY BALLOON.

(From the Berlin Special Correspondent of *The Standard.*)

PROFESSOR ASSMANN states that the Royal Prussian Meteorological Institute in Berlin is about to make arrangements for the systematic examination of the higher strata of the atmosphere by means of special apparatus. In the grounds of the Aeronautical Observatory at Tegel—a suburb of Berlin where Alexander and William von Humboldt were buried—registrations of atmospheric conditions at a height of three to five thousand mètres will be carried on, if possible, day and night, with kites and kite-balloons. The registering apparatus, which automatically notes the pressure, temperature, humidity, and wind velocity, at these heights, is taken up by a kite-balloon connected with the earth by piano wire. It is inflated with hydrogen, and can take fifteen hundred mètres of wire. Under favourable conditions a kite of the Hargrave type, with a surface of three square mètres, is attached to the lower end, and this can lift five hundred mètres of wire. To it a second kite is attached, and to this latter a third, and so on; until the balloon reaches a height of four thousand or more mètres. An elevation of four thousand five hundred mètres has been attained by kites even without balloons, when there was sufficient wind. The control of the kites is effected by means of electrically driven windlasses. Judging from the experience hitherto gained in casual experiments, the regular investigations, which it is proposed to conduct, should lead to important results.

CLIMATOLOGICAL TABLE FOR THE BRITISH EMPIRE, AUGUST, 1899.

STATIONS. *(Those in italics are South of the Equator.)*	Absolute. Maximum. Temp.	Date.	Absolute. Minimum. Temp.	Date.	Average. Max.	Min.	Dew Point.	Humidity.	Absolute. Max. in Sun.	Min. on Grass.	TotalRain. Depth.	Days.	Aver. Cloud.
	°		°		°	°	°	0-100	°	°	inches		
London, CamdenSquare	91·2	15	48·6	21	79·4	56·6	55·5	68	130·2	40·9	·70	6	3·8
Malta	92·5	9	66·2	25	86·6	70·2	65·7	66	149·5	59·4	·00	0	0·7
Cape of Good Hope	87·0	17	42·7	27	61·6	50·9	49·6	87	...	...	8·83	18	7·7
Mauritius	76·1	29	58·3	15	73·5	64·0	59·5	75	145·6	51·9	3·40	24	5·8
Calcutta	94·3	6	75·1	19	89·8	79·6	78·8	85	156·0	74·6	8·90	24	8·4
Bombay	87·2	2	75·0	7	85·6	77·8	75·0	80	135·8	73·0	5·23	23	6·9
Ceylon, Colombo	91·2	5	75·0	1	89·4	77·9	73·3	77	157·5	72·0	·62	8	4·7
Melbourne	71·7	29	31·6	1	58·6	42·8	44·0	80	124·7	26·0	2·51	7	5·6
Adelaide	77·8	29	36·6	2	62·3	45·3	42·3	68	134·0	25·9	1·59	8	4·7
Sydney	74·0	31	38·8	10	59·5	48·8	81·0	46	140·1	27·8	14·89	23	6·2
Wellington	59·0	18	34·0	6, 7	53·9	40·5	38·5	79	105·0	24·0	2·43	14	4·2
Auckland	65·0	27	41·0	1	57·2	46·6	42·3	73	121·0	37·0	2·78	12	6·7
Trinidad	93·0	15	70·0	Sev.	90·8	71·9	75·2	84	170·0	68·0	8·45	17	...
Grenada	86·8	27	72·0	2*a*	83·6	75·4	72·3	72	150·4	...	8·99	20	3·0
Toronto	92·1	19	46·3	9	82·3	58·3	58·6	70	114·0	41·5	·27	2	3·7
New Brunswick, Fredericton	84·9	19	43·0	9	75·1	52·7	53·6	63	...	...	·76	3	4·4
Manitoba, Winnipeg	87·0	19	31·5	31	75·7	50·8	...	78	...	...	3·42	10	5·4
British Columbia, Esquimalt	...	...	...	...	...	...		...	...	...	...	...	...

a—and 23.

REMARKS.

MALTA.—Adopted mean temp. 77°·7, or 0°·4 below average. Mean hourly velocity of wind 5·7, or 1·6 below average. Mean temp. of sea 81°·3. L on 4th, 5th, and 6th. J. F. DOBSON.

Mauritius.—Mean temp. of air 0°·4 below, of dew point 0°·2 above, and rainfall ·96 in. above, their respective averages. Mean hourly velocity of wind 13·8 miles, or 2·3 above average; extremes, 31·8 on 7th and 1·6 on 2nd; prevailing direction, E.S.E. A. WALTER.

CEYLON, COLOMBO.—Mean temp. of air 82°·5, or 1°·9 above, of dew point 0°·2 above, and rainfall 3·15 in. below, their respective averages. Mean hourly velocity of wind 7·4 miles; prevailing direction S.W. H. O. BARNARD.

Adelaide.—Mean temp. of air 0°·2 above, and rainfall ·77 in. below, the average of 42years. C. TODD, F.R.S.

Sydney.—Temp. equal to the average; humidity 7·6 above, and rainfall 11·72 in. above, their respective averages. H. C. RUSSELL, F.R.S.

Wellington.—Generally fine, with frequent frosty nights, and clear sky, very fine in the early part, but showery in the latter part. Very slight earthquake on 6th. Temp. 0°·8 below, and rain 2·77 in. below, their respective averages. R. B. GORE.

Auckland.—Very violent N.E. gale, gradually shifting to S.E. during the period from the 14th to the 19th, the rest of the month fine and dry, excepting heavy rain on 30th. Mean temp. and rainfall much below average. T. F. CHEESEMAN.

TRINIDAD.—Rain 1·87 in. below the average of 30 years. J. H. HART.

SUPPLEMENTARY TABLE OF RAINFALL, JANUARY, 1900.

Div	STATION.	Total Rain.	Div.	STATION.	Total Rain.
		in.			in.
I.	Uxbridge, Harefield Pk..	3·42	XI.	Builth, Abergwesyn Vic.	7·86
II.	Dorking, Abinger Hall .	4·10	,,	Rhayader, Nantgwillt ...	7·55
,,	Birchington, Thor	2·98	,,	Lake Vyrnwy	5·85
,,	Hailsham	3·88	,,	Corwen, Rhug	3·39
,,	Ryde, Thornbrough	3·87	,,	Criccieth, Talarvor	4·79
,,	Emsworth, Redlands ...	3·76	,,	I. of Anglesey, Lligwy..	4·82
,,	Alton, Ashdell	...	,,	I. of Man, Douglas	4·71
III.	Oxford, Magdalen Coll..	2·20	XII.	Stoneykirk, Ardwell Ho.	...
,,	Banbury, Bloxham	3·49	,,	New Galloway, Glenlee	7·58
,,	Northampton, Sedgebrook	3·30	,,	Moniaive, Maxwelton Ho.	4·78
,,	Alconbury	3·27	,,	Lilliesleaf, Riddell	3·72
,,	Wisbech, Bank House...	3·25	XIII.	N. Esk Res. [Penicuick]	4·30
IV.	Southend	2·80	XIV.	Glasgow, Queen's Park..	5·08
,,	Colchester, Lexden	2·51	XV.	Inverary, Newtown	9·53
,,	Saffron Waldon, Newport	3·00	,,	Ballachulish, Ardsheal...	10·47
,,	Rendlesham Hall	3·79	,,	Islay	...
,,	Scole Rectory	2·69	XVI.	Dollar.....	6·27
,,	Swaffham	4·00	,,	Balquhidder, Stronvar...	11·57
V.	Salisbury, Alderbury ...	3·40	,,	Coupar Angus Station...	3·83
,,	Bishop's Cannings	3·01	,,	Blair Atholl	2·98
,,	Blandford, Whatcombe .	5·14	XVII.	Keith H.R.S.....	3·04
,,	Ashburton, Holne Vic...	7·63	,,	Forres H.R.S.	3·09
,,	Okehampton, Oaklands.	6·47	XVIII.	Fearn, Lower Pitkerrie..	2·46
,,	Hartland Abbey	5·01	,,	S. Uist, Askernish	...
,,	Lynton, Glenthorne ...	5·53	,,	Invergarry.....	9·17
,,	Probus, Lamellyn	6·33	,,	Aviemore, Alvie Manse.	3·40
,,	Wellington, The Avenue	4·43	,,	Loch Ness, Drumnadrochit	4·76
,,	North Cadbury Rectory	3·47	XIX.	Inversbin	4·01
VI.	Clifton, Pembroke Road	4·54	,,	Durness.....	5·98
,,	Ross, The Graig	2·97	,,	Watten H.R.S.....	2·40
,,	Wem, Clive Vicarage ...	2·27	XX.	Dunmanway, Coolkelure	7·30
,,	Wolverhampton, Tettenhall	2·87	,,	Cork, Wellesley Terrace	3·43
,,	Cheadle, The Heath Ho.	4·73	,,	Killarney, Woodlawn ..	5·31
,,	Coventry, Priory Row...	3·63	,,	Caher, Duneske	4·11
VII.	Market Overton	...	,,	Ballingarry, Hazelfort...	4·55
,,	Grantham, Stainby	3·80	,,	Limerick, Kilcornan ...	...
,,	Horncastle, Bucknall ...	2·36	,,	Miltown Malbay	5·06
,,	Worksop, Hodsck Priory	2·93	XXI.	Gorey, Courtown House	2·86
VIII.	Neston, Hinderton	3·47	,,	Moynalty, Westland ...	3·88
,,	Southport, Hesketh Park	4·30	,,	Athlone, Twyford	4·38
,,	Chatburn, Middlewood.	6·32	,,	Mullingar, Belvedere ...	4·27
,,	Duddon Val., Seathwaite Vic.	10·87	XXII.	Woodlawn	5·87
IX.	Melmerby, Baldersby ...	2·89	,,	Crossmolina, Enniscoe ..	6·43
,,	Scalby, Silverdale	...	,,	Collooney, Markree Obs.	4·77
,,	Ingleby Greenhow Vic..	3·56	XXIII.	Belturbet, Redhills	...
,,	Middleton, Mickleton ...	3·93	,,	Warrenpoint.....	3·97
X.	Haltwhistle, Unthank H.	4·39	,,	Seaforde.....	2·37
,,	Bamburgh	2·43	,,	Belfast, Springfield	3·95
,,	Keswick, The Bank.....	6·27	,,	Bushmills, Dundarave..	4·47
XI.	Llanfrechfa Grange	5·66	,,	Stewartstown	3·59
,,	Llandovery	4·84	,,	Killybegs	6·66
,,	Castle Malgwyn	4·14	,,	Horn Head	4·85
,,	Brecknock, The Barracks	4·16			

JANUARY, 1900.

Div.		STATIONS. [The Roman numerals denote the division of the Annual Tables to which each station belongs.]	RAINFALL. Total Fall.	Difference from average 1880-9.	Greatest Fall in 24 hours. Dpth	Greatest Fall in 24 hours. Date	Days on which ·01 or more fell.	TEMPERATURE. Max. Deg.	Max. Date	Min. Deg.	Min. Date.	No. of Nights below 32°. In shade.	No. of Nights below 32°. On grass.
			inches.	inches.	in.								
I.	ENGLAND.	London (Camden Square) ...	2·92	+ 1·30	·47	1	21	53·9	24	25·8	14	10	21
II.		Tenterden	3·31	+ 1·41	·58	6	22	52·0	2	28·0	6, 21	9	19
,,		Hartley Wintney	2·73	...	·66	6	20	53·0	24	25·0	6	13	21
III.		Hitchin	3·11	+ 1·57	·74	6	23	52·0	24	27·0	20	16	...
,,		Winslow (Addington)	3·42	+ 1·61	1·07	6	22	54·0	23	23·0	21	14	21
IV.		Bury St. Edmunds (Westley)	2·86	+ 1·39	·57	6	19	51·0	24	27·0	13	...	...
,,		Norwich (Brundall)	2·74	...	·32	21	23	50·2	24	26·0	14	13	26
V.		Winterbourne Steepleton ...	5·71	...	1·40	6	22	51·1	8*a*	25·1	6	3	14
,,		Torquay (Cary Green)	5·36	...	1·45	6	23	55·2	8	32·2	6	0	9
,,		Polapit Tamar [Launceston]..	5·64	+ 2·62	1·03	6	25	52·1	21	27·2	6	4	9
VI.		Stroud (Upfield)	3·73	+ 1·53	1·02	6	24	50·0	24	30·0	5, 20	10	...
,,		ChurchStretton(Woolstaston)	3·11	+ ·95	·59	1	24	51·5	23	30·0	5	9	23
,,		Worcester (Diglis Lock)	3·60	+ 1·80	·84	6	24	...	...	...	...	...	...
VII.		Boston	3·32	+ 1·93	·78	7	15	50·0	23	24·0	28	17	...
,,		Hesley Hall [Tickhill].....	2·64	+ ·87	·90	6	21	52·0	23*a*	26·0	28	9	...
,,		Breadsall Priory	4·10	...	·60	1	27	...	..	...	...	...	...
VIII.		Manchester(PlymouthGrove)	4·34	+ 1·88	·78	6	26	53·0	23	28·0	10	6	10
IX.		Wetherby (Ribston Hall) ...	4·03	+ 2·14	1·25	6	23	...	...	...	...	...	...
,,		Skipton (Arncliffe)	8·30	+ 2·66	1·51	6	28	...	...	...	...	...	...
,,		Hull (Pearson Park).	2·89	+ 1·12	·58	1	20	52·0	23	24·0	28	16	26
X.		Newcastle (Town Moor)	3·65	+ 1·84	·82	31	18	...	...	...	...	...	...
,,		Borrowdale (Seathwaite).....	17·89	+ 5·71	4·05	6	27	...	...	...	...	...	...
XI.	WALES.	Cardiff (Ely).....	5·78	+ 2·49	1·38	6	22	...	...	...	...	...	...
,,		Haverfordwest	5·82	+ 1·40	1·03	6	25	52·1	8	28·8	21	3	14
,,		Aberystwith (Gogerddan) ...	5·09	+ 1·56	·75	6	22	48·0	15*b*	21·0	20	15	...
,,		Llandudno.....	3·46	+ 1·18	·51	6	22	54·5	21	34·0	6	0	...
XII.	SCOTLAND.	Cargen [Dumfries]	4·37	+ ·60	·56	14	21	53·0	23	29·0	1	4	...
XIII.		Edinburgh (Blacket Place)...	3·38	...	·91	2	29	51·9	23	29·8	28	6	16
XIV.		Colmonell	6·00	...	·62	13	25	50·0	23	25·0	4	...	...
XV.		Tighnabruaich	8·92	...	1·24	21	25	48·0	23	27·0	4	10	...
,,		Mull (Quinish).....	7·58	+ 1·91	·88	5	25	...	...	...	...	...	...
XVI.		Loch Leven Sluices	5·10	+ 2·20	1·60	3	17	...	...	...	...	...	...
,,		Dundee (Eastern Necropolis)	3·60	+ 1·63	1·70	2	23	55·2	22	27·2	28	8	...
XVII.		Braemar	3·98	+ 1·29	·82	2	25	48·9	26	22·0	28	21	30
,,		Aberdeen (Cranford)	3·97	...	1·25	2	20	55·0	22	26·0	27	19	...
,,		Cawdor (Budgate)	3·61	+ 1·44	·62	3	24	...	...	...	...	...	...
XVIII		Strathconan [Beauly]	10·15	+ 5·27	1·10	3	16	..	...	...	...	...	...
,,		Glencarron Lodge.....	12·84	...	1·64	22	29	51·1	22	28·0	17	11	...
XIX.		Dunrobin	4·42	+ 1·96	·74	19	21	53·0	23	28·0	28	11	...
,,		S. Ronaldshay (Roeberry) ...	3·24	+ ·29	·37	6*a*	30	50·0	22	30·0	8	7	...
XX.	IRELAND.	Darrynane Abbey.....	3·56	...	·48	2	27	...	...	...	...	...	...
,,		Waterford (Brook Lodge) ...	5·26	+ 1·70	2·23	1	25	54·0	22	27·0	5	6	...
,,		Broadford (Hurdlestown) ...	4·65	...	1·30	1	29	...	...	...	...	...	...
XXI.		Carlow (Browne's Hill)	2·86	— ·04	·43	1	25	...	...	...	...	...	...
,,		Dublin (FitzWilliam Square)	2·58	+ ·72	·33	1	27	55·7	21	32·0	5	2	18
XXII.		Ballinasloe	5·43	+ 2·35	1·82	1	23	51·0	16	28·0	28	8	...
,,		Clifden (Kylemore)	7·99	...	1·56	5	25	...	...	...	...	...	...
XXIII		Waringstown	2·48	— ·17	·58	5	20	45·0	14*d*	20·0	4	...	...
,,		Londonderry (Creggan Res.).	4·28	+ ·86	·59	27	29	...	...	...	...	...	...
,,		Omagh (Edenfel)	4·53	+ 1·51	·52	1	27	50·0	12*c*	24·0	4	9	21

+ Shows that the fall was above the average ; — that it was below it.
a—and 24. *b*—and 17, 24. *c*—and 22. *d*—and 15, 19.

METEOROLOGICAL NOTES ON JANUARY, 1900.

ABBREVIATIONS.—Bar. for Barometer; Ther. for Thermometer; Max. for Maximum; Min. for Minimum; T for Thunder; L for Lightning; TS for Thunderstorm; R for Rain; H for Hail; S for Snow.

ENGLAND.

TENTERDEN.—A wet month, helpful in raising the level of water in wells and ponds. Duration of sunshine 41 hours. Nearly all the lowest temps. were with wind from S. or S.E. The min. on grass fell to 20° on 12th, 13th, 14th and 21st.

HARTLEY WINTNEY.—A black January. Most variable weather, with R on 20 days and slight frost on 21 days. Rainfall about an inch above the average, and springs rising sparingly. Cold E. wind on the last 4 days, with an average max. temp. of 37°. Fogs on 1st, 12th, 16th and 21st. Parhelia on 11th. Ozone on 23 days, with an average of 5·1. Prevalence of light S.W. winds.

WINSLOW, ADDINGTON.—There has been no such rainfall in January since 1877, and the only other exceeding it in 30 years was 1872. The heavy R on 6th caused a very large flood, the brook overflowing the meadows to a great extent. The temp. only once fell below 29°, the only sharp frost being on 21st. S on 12th, 27th and 28th.

BURY ST. EDMUNDS, WESTLEY.—Mild and dull with little S, and great variation of bar. pressure. S on 27th and 28th.

NORWICH, BRUNDALL.—A humid month, with much dark cloud and frequent R. Less mild than in 1898 and 1899, but very little S, and frosts slight. R about 1·00 in., and temp. about 1°·0 above the average. S on 15th, 27th and 31st. N.E. gale on 28th.

WINTERBOURNE STEEPLETON.—Wet and mild and very much like January, 1899, when 5·59 in. of R fell on 23 days, the mean temp. being 42°, while the mean for this month is 41°·3. S on 28th.

TORQUAY, CARY GREEN.—R 2·15 in. above the average. Mean temp. 44°·4, or 2°·5 above the average. Duration of sunshine 61 hrs. 50 mins., being 30 mins. below the average; 12 sunless days. Ozone mean 6·7; greatest 9·0 on 8th and 17th, with S. and W. winds; least 1·0 on 6th, with N. or E. winds.

POLAPIT TAMAR [LAUNCESTON].—A very wet month, the total fall being, with the exception of 1899, the largest fall in January since 1886. H on 2nd, 17th and 27th. S on 28th.

CHURCH STRETTON, WOOLSTASTON.—R fell nearly every day, and there was frost on grass on most nights. Gale on 22nd. S on 27th, 29th and 31st. Mean temp. 39°·1.

SEATHWAITE.—S an inch deep on the ground at 9 a.m. on 28th.

WALES.

HAVERFORDWEST.—A mild, wet month, with very little sunshine and only one bright day. The wind reached the force of a gale on four days, and fog occurred on six days. There was not much frost, the lowest reading on grass being 23°·0 on 6th and 21st. Vegetation in sheltered places is very forward, and frost is much needed to check it. L at night on 28th; S on the mountains on 28th.

ABERYSTWITH, GOGERDDAN.—A very wet, cold and sunless month.

LLANDUDNO.—H on 10th, 27th and 30th. Lunar halos on 10th and 15th.

SCOTLAND.

CARGEN [DUMFRIES].—A month of cloudy, wet and unsettled weather. The means of bar. pressure, temp. and R do not deviate considerably from the averages of 41 years, the bar. being ·028 in. lower, the temp. 1°·5 higher, and the rainfall ·36 in. more, than the average. There was a remarkable absence of frost, the min. temp. falling below 32° on only 4 nights. Westerly winds prevailed on 15 days, and only 49 hours of sunshine were recorded. The wet weather proved very trying to farm-stock wintered out, but ploughing was well advanced. S showers on 28th.

EDINBURGH, BLACKET PLACE.—Mean temp. 2°·4 above, and mean pressure ·017 in. below, the average. Rainfall 41 per cent. above the average. The number of rainy days (29) is the highest recorded in any month during 45 years; July, 1882, having the same number. S on 6 days, heavy on 9th and 26th. H on 15th. TS with H on 19th, and aurora on the same day.

COLMONELL.—R 1·50 in. above, and mean temp. 3°·3 above, the average for 23 years. T and L on 9th, L on 28th. H on 27th and 28th. Gales on 14th, 15th and 16th.

TIGHNABRUAICH, CRAIGANDARAICH.—It is suitable that under the sign of Aquarius we should have a record rainfall, the heaviest in any month for many years. T and L on 24th.

ABERDEEN, CRANFORD.—The month was very free from S, but with strong W. winds.

S. RONALDSHAY, ROEBERRY.—Mean temp. 39°, being 0°·7 above the average of ten years.

IRELAND.

DARRYNANE ABBEY.—Constantly wet, but no heavy falls of R except on the afternoon of 13th, when ·36 in. fell in three-and-a-half hours.

BROADFORD, HURDLESTOWN.—A wet and unhealthy month. R 1·77 in. above, and rainy days 7 above, the average for 15 years. Fog on 4 days. T and sleet on 28th.

DUBLIN, FITZWILLIAM SQUARE.—Like January, 1899, this was a cloudy, rainy and generally open month. The weather was essentially of a cyclonic type. R fell on 29 days, but on two the fall was almost inappreciable. The dulness and dampness of the weather were equalled only by the unsteadiness of pressure and temp. The mean temp., 42°·8, is 1°·4 above the average. Fog on 6 days. High winds on 17 days, reaching the force of a gale on 5. S and sleet fell on 27th, 28th and 29th; H on 5th, 15th, 24th, and 27th to 30th. The temp. exceeded 50° on 9 days.

OMAGH, EDENFEL.—A wet, raw and unpleasant month, and although the temp. on grass fell below freezing-point on 21 nights, the day temp. was uniformly above 40°, and it was accordingly R and wet S that fell on the 27 wet days.